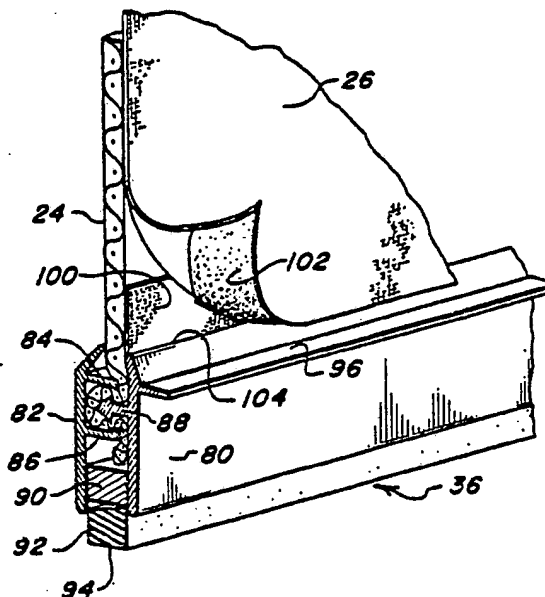


INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ³ : E06B 9/08	A1	(11) International Publication Number: WO 84/ 04559 (43) International Publication Date: 22 November 1984 (22.11.84)
(21) International Application Number: PCT/US84/00736 (22) International Filing Date: 11 May 1984 (11.05.84) (31) Priority Application Number: 494,346 (32) Priority Date: 13 May 1983 (13.05.83) (33) Priority Country: US (71) Applicant: APPROPRIATE TECHNOLOGY CORPORATION [US/US]; P.O. Box 975, Brattleboro, VT 05301 (US). (72) Inventors: HAUSMANN, Scott ; South Street, West Brattleboro, VT 05301 (US). McLANE, Allan, Jr. ; Sunset Lake Road, Marlboro, VT 05344 (US). (74) Agents: GREENFIELD, George, L. et al.; Wolf, Greenfield & Sacks, 201 Devonshire Street, Boston, MA 02110 (US).		(81) Designated States: DE (European patent), DK, FR (European patent), GB (European patent), JP, NL (European patent), NO, SE (European patent). Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i>

(54) Title: INSULATING SHADE ASSEMBLY WITH REMOVABLE COVER



(57) Abstract

An insulating window shade assembly (10) includes a first roller (30) carrying an insulating shade and a second roller (32) carrying a cover fabric. The shade and cover fabric are supported in essentially face to face relationship, and their bottoms are secured together by a Velcro-type fastener (100, 102). The cover fabric conceals the insulating shade, it may be removed from the shade for cleaning or may be changed and it may be adjusted for smoothness and to compensate for any stretching which occurs in the materials.

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AT	Austria	KR	Republic of Korea
AU	Australia	LI	Liechtenstein
BE	Belgium	LK	Sri Lanka
BG	Bulgaria	LU	Luxembourg
BR	Brazil	MC	Monaco
CF	Central African Republic	MG	Madagascar
CG	Congo	MR	Mauritania
CH	Switzerland	MW	Malawi
CM	Cameroon	NL	Netherlands
DE	Germany, Federal Republic of	NO	Norway
DK	Denmark	RO	Romania
FI	Finland	SD	Sudan
FR	France	SE	Sweden
GA	Gabon	SN	Senegal
GB	United Kingdom	SU	Soviet Union
HU	Hungary	TD	Chad
JP	Japan	TG	Togo
KP	Democratic People's Republic of Korea	US	United States of America

-1-

INSULATING SHADE ASSEMBLY WITH REMOVABLE COVER

INTRODUCTION

This invention relates to insulating shades for windows and more particularly comprises a new and improved insulating shade with a removable cover fabric which enables the owner to change or clean the cover fabric as the owner wishes.

Conventional insulating shades are usually made up of a layer of insulating material and a separate cover fabric which are sewn, welded or otherwise adhered permanently together. Frequently, the shades are sold with the cover fabric attached, and the purchaser is offered only a limited selection of cover patterns. Other insulating shades are sold without the cover fabric, and the purchaser separately acquires the cover fabric and permanently secures it to the insulating layer.

Because the cover fabric in conventional prior art insulating shades is permanently secured to the insulating layer, the cover fabric cannot be changed or be cleaned independently of the insulating layer without very considerable expense and inconvenience to the owner. Moreover, the cover fabric cannot be adjusted for stretching of one layer with respect to the other nor for any wrinkles that may arise due to distortion of the insulation or fabric.



-2-

One important object of the present invention is to enable a person to remove the cover fabric from the insulating layer in an insulating window shade so that the cover fabric may be independently washed, cleaned or replaced.

Another important object of this invention is to provide a cover fabric which conceals the insulating layer and which may be adjusted to compensate for stretching or to smooth out any wrinkles that may appear.

In accordance with the present invention, the objectives are achieved by constructing the shade so that the cover fabric is not permanently attached to the insulating layer. This allows the cover fabric to be adjusted or be removed for cleaning or for replacement. And because the cover fabric is not permanently secured to the insulating material, the owner is allowed to use virtually any type of covering fabric. There are no constraints imposed by sewing, welding, or other attachment methods.

In accordance with the preferred form of this invention, the insulating window shade assembly includes a pair of spaced brackets that are adapted to be mounted on the opposite top sides of the frame of the window to be insulated. A roller with insulating material is mounted on the brackets, and the material is adapted to be drawn over the inside of the window. The roller for the insulating layer is operated by a pull cord counterwound on a pulley attached to the roller. A second roller carrying a cover fabric is mounted on the brackets and is disposed on the inside of the insulating layer when

-3-

the insulating layer is drawn. The cover fabric is substantially the same width as the insulating material so as to cover the inside of the insulating layer when both sheets are drawn over the window.

5 An idler roller is also mounted on the brackets inwardly of the insulating material, and the cover fabric extends about this roller. The idler roller supports the cover fabric very close to the insulating layer. The bottoms of the insulating

10 layer and cover fabric are detachably secured together by a Velcro or similar type of fastener. The cover fabric roller is spring-loaded to retract the cover fabric, and the cover fabric is held in tension when the insulating sheet is drawn so that

15 the cover sheet lies closely adjacent to and smoothly over the insulating layer. Channels on the sides of the window seal the edges of the insulating layer and overlap the side edges of the cover fabric to provide the shade with a finished appearance. A

20 strip is carried on a batten at the bottom of the shade to seal against the window sill, and a second strip at the top of the insulating layer cooperates with the idler roller to push the insulating layer against the window trim to form a seal at the top of

25 the window.

This invention will be better understood and appreciated from the following detailed description of one embodiment thereof, selected for purposes of illustration and shown in the accompanying drawings.

30



-4-

BRIEF FIGURE DESCRIPTION

FIG. 1 is a front view of an insulating window shade assembly constructed in accordance with this invention, shown mounted on a window and in drawn position;

FIG. 2 is an enlarged fragmentary vertical cross-sectional view through the shade assembly and window, taken along section line 2-2 of FIG. 1;

FIG. 3 is a fragmentary perspective view of the bottom of the shade assembly;

FIG. 4 is a horizontal cross-sectional view of the shade assembly and window, taken along section line 4-4 of FIG. 1;

FIG. 5 is a detailed view of the pull cord subassembly of the invention;

FIG. 6 is a cross-sectional detail view of the bottom of the shade assembly; and

FIG. 7 is a plan view of a portion of the Velcro-type hook fabric used in the invention.

DETAILED DESCRIPTION

In FIG. 1 the shade assembly 10 is shown mounted on a window frame 12. The frame 12 includes a sill 14, left and right jambs 16 and 18, and a lintel 20. The window itself may be any variety; the window configuration per se is not part of the present invention.

The shade assembly 10 is mounted on the faces of the jambs 16 and 18 and lintel 20 and includes a valance 21, edge tracks 22, and shade 23 which has insulating layer 24 and cover fabric 26. The assembly also includes a pair of brackets 28, roller



-5-

30 for the insulating layer, cover fabric roller 32 and idler roller 34, all supported at the top of the window frame 12, and a batten 36 at the bottom of the shade. These several parts of the assembly
5 along with their functions are described in detail below.

The valance 21 shown in FIGS. 1 and 2 includes a front panel 40, a top wall 42 and a short rear wall 44. The rear wall 44 may be attached directly to
10 the lintel 20 so as to fix the valance in place. It is to be understood that the configuration of valance shown is not critical to the present invention, and it may take a variety of different forms. One bracket 28 is mounted behind the front
15 panel 40 of the valance 21 at each end of the valance, and the brackets 28 may be connected either to the valance itself or to the lintel 20. It is within the scope of this invention that the brackets 28 be connected directly to the window frame and the
20 valance 21 be hung from the brackets.

Roller 30 which carries the insulating layer of material 24 is supported for rotation on the brackets 28 and is confined within the valance 21 behind front panel 40. Roller 30 may be of
25 conventional construction and is operated by the pull cord system 50 shown in FIG. 5. The pull cord system includes a pulley 52 coaxial with and secured to one end of roller 30, and the roller and pulley rotate together. Pull cord 54 is wound on the
30 pulley 52 in the counter direction of the insulating shade material 24 on roller 30 so that as the insulating material is drawn off roller 30, the pull



-6-

cord 54 is wound onto pulley 52. Pull cord 50 extends about jamb roller 56 supported by yoke 58 on the jamb of the window so as to releasably lock the shade in any desired elevation.

5 The insulating shade material 24 may be made of a variety of different materials. In the preferred form, the material 24 is quilted and is made up of a multi-layered laminate including layers of polyester fabric, batting and polyester film. Normally, the
10 insulating material is quite bulky and consequently requires substantially more space about the roller 30 to accommodate the material than is required for the cover fabric 26 wound about roller 32.

15 As shown in FIG. 2, cover fabric roller 32 is supported from brackets 28 below roller 30. Cover fabric 26 which may be made of any type of material and be of any weight is wound counterclockwise on roller 32 and extends from roller 32 over idler roller 34 and down the front of the window on the
20 inside of insulating material 24. The insulating material 24 is wound clockwise about the roller 30, and it also extends behind the idler roller 34 on the window side of cover fabric 26. Roller 32 in the preferred form is biased as suggested by the
25 mechanism 33 in FIG. 2 so as to constantly exert a tensioning pull on the cover fabric in an upward direction. This action of the roller 32 is counteracted by the connection between the cover fabric and the insulating material as shown in FIG.
30 3 and described in detail below.

 The width of the cover fabric 26 is substantially the same as that of the insulating



-7-

material 24 and it conceals the insulating material. The insulating material has a beaded edge 62 which is disposed in the channel 64 defined by legs 66 and 68 of the edge track 22. As shown in FIG. 4, bead 62 is disposed inside the channel 64, and its diameter is larger than the slot 70 defined by the inner edges of the legs 66 and 68. This arrangement forms a seal between the insulating material and the edge track so as to prevent cold air from flowing about the sides of the insulating material to the interior of the structure.

Edge tracks 22 on each window jamb include an inwardly extending flange 72 which overlaps the edge 74 of the cover fabric 26 so as to retain the side edges of the cover fabric closely adjacent the insulating material, prevent the edges from curling, conceal the insulating material 24 and otherwise provide the insulating shade with a finished appearance. As shown in FIG. 4, the edge track 22 is mounted on the front face of the jamb 16 forming part of the window trim.

Batten 36 at the bottom of the shade includes a front panel 80 and rear panel 82 with interfitting flanges 84, 86 and 88 which sandwich and encase the lower edge of the insulating material 24. The flange 88 is barbed to hold the parts together. A weight 90 is contained within the panels 80 and 82 of the batten so as to cause the shade to hang smoothly. Beneath the weight is a foam strip 92 that extends below the lower edges of the panels 80 and 82 and is intended to form a seal with the window sill 14 when the shade is fully drawn. The



-8-

lower surface 94 of the foam strip 92 may be inclined slightly so as to conform to the inclination of the sill.

5 The inner panel 80 of the batten carries an inwardly extending flange 96 provided for the convenience of the operator. The flange 96 enables the operator to grasp the batten to draw the shade downwardly when the window is to be covered.

10 A strip 100 of hook-bearing Velcro-type material is provided at the bottom of the insulating material 24 and extends across the bottom of the shade. As shown in FIG. 7, the face of the strip 100 carries the hook members 101 on half the strip width while the other half is bare. The strip is not sewn or
15 otherwise directly attached to the insulating material 24 but rather it is held in place by being clamped along with the bottom of the insulating material between the panels 80 and 82 of the batten 36. As is evident in FIG. 6, the part of the strip
20 100 which does not bear the hook members extends below the edges 104 and 105 of the panels 80 and 82 of the battens. Therefore, there are no hook members to interfere with the clamping of the strip.

25 It is very desirable that the strip 100 not be stitched or otherwise secured directly to the insulating material 24. When it is secured to that material, the strip tends to pull the bottom of the insulating material to one side with respect to the tracks 22, and this interferes with the seals
30 between the track and the shade so as to lessen the effectiveness of the shade.



-9-

5 A complementary strip 102 of looped fabric is
secured to the bottom of the cover fabric 26 so that
the cover fabric may be secured at the bottom to the
insulating material. The Velcro-type strips 100 and
102 face one another and therefore are not visible
when the cover fabric is mounted in place over the
insulating material. The cover fabric 26 should be
just long enough to touch or slightly overlap the
upper edge 104 of the inner panel 80 of the batten
10 so as to give to the shade a finished appearance.

A second foam strip 110 is carried by the
insulating material 24 at the top of the shade. The
foam strip 110 is disposed on the side of the
insulating material away from the window and is
15 oriented so that it lies immediately behind the
idler roller 34 when the shade is fully drawn. The
foam strip 110 forces the insulating material
against the window lintel 20 by virtue of its
cooperation with the idler roller 34 so as to cause
20 the insulating material to form a seal at the top
against the window trim. The foam block also forms
a seal between the insulating material and the cover
fabric when the block is pinched behind the idler
roller.

25 From the foregoing description of the shade, it
is apparent that the cover fabric 26 may be removed
from the shade assembly merely by opening the Velcro
connection at the bottom of the shade above the
batten 36 and winding the fabric onto the roller
30 32. The cover fabric and roller 32 may be
dismounted from the brackets 28, and the cover may
then be removed for any purpose and be readily



-10-

changed if desired. This feature also enables the cover fabric and the insulating material to be cleaned separately, which is particularly desirable if the cover fabric and insulating material are different materials and therefore require different cleaning or washing processes. Of course the owner, if desired, may replace the cover fabric with another merely by removing the fabric from the roller 32 and loading the new fabric onto it. Thus, the owner is afforded complete flexibility.

It will also be apparent from the foregoing description that the cover fabric 26 with the valance 21 and tracks 22 conceals the insulating fabric. Furthermore, the bottoms of the cover fabric and insulating materials may be separated along the batten so that the cover fabric may be smoothed out if wrinkles or other distortions of the fabric occur for any reason. Consequently, the shade may always have a fresh, smooth look.

Because numerous modifications may be made of this invention without departing from its spirit, it is not intended to limit the scope of this invention to the single embodiment illustrated and described. Rather, it is intended that the scope of this invention be determined by the appended claims and their equivalents.

What is claimed is:



-11-

1. An insulating window shade assembly comprising

a pair of spaced brackets adapted to be mounted on opposite top sides of the frame of a window to be insulated,

a roll of insulating material mounted on the brackets and adapted to be drawn over the inside of said window,

channels adapted to be mounted on the sides of the window and receiving the side edges of the insulating material to form a seal about its edges when the shade is drawn,

a second roll carrying a cover fabric mounted on the brackets and disposed on the inside of the insulating material when the insulating material is drawn, said cover fabric being substantially the same width as the insulating material so as to be capable of covering the inside of the insulating material when both are drawn over the window,

a flange forming part of each of the channels for covering the side edges of the cover fabric when drawn over the window,

means detachably connecting the leading edges of the insulating material and fabric together so that the two will move together when connected and enabling the cover fabric to be removed or adjusted, and

an idle roller mounted on the brackets immediately inward of the insulating material and about which the cover fabric extends, said idle roller supporting the cover fabric when drawn, very closely adjacent the insulating material.



-12-

2. An insulating window shade assembly as defined in claim 1 further characterized by said second roller being biased to retract the cover fabric,

5 and a pull cord connected to the roll of insulating material for retracting it, the connection between the leading edges of the fabric and insulating material enabling the position of the insulating material to control the position of the
10 cover fabric.

3. An insulating window shade assembly as defined in claim 1 further characterized by an insulating strip at the top of the insulating material adapted to be squeezed between the idler
5 roller and frame when the shade is drawn.

4. An insulating window shade assembly as defined in claim 3 further characterized by said insulating strip being a foam-like material and disposed between the two material and fabric
5 when they are drawn.

5. An insulating window shade assembly as defined in claim 1 further characterized by a valance connected to the brackets and covering the rollers from the inside.



-13-

6. An insulating window shade assembly comprising

bracket means adapted to be mounted on the frame of a window,

5 a first roller carrying an insulating shade and supported by the bracket means, said shade being adapted to be drawn from the roller and cover the window and to be wound upon the roller to expose the window,

10 a second roller carrying a removable cover fabric and supported by the bracket means, the bottom of said cover fabric being detachably connected to the bottom of the insulating shade,

guide means mounted adjacent the second roller causing the cover fabric to hang closely adjacent 15 the front of the insulating shade when the insulating shade is drawn over the window,

and means placing the cover fabric in tension when the insulating shade is drawn so that the cover 20 fabric lies and smoothly over the shade and so the cover fabric may be removed from the insulating shade.

7. An insulating shade assembly as defined in claim 6 further characterized by

a first strip of Velcro-type material fastened to the bottom of the insulating shade,

5 and a second strip of mating Velcro-type material fastened to the bottom of the cover fabric, the two Velcro-type strips permitting the cover fabric to be removed from and adjusted with respect to the insulating shade.



-14-

8. An insulating shade assembly as defined in claim 7 further characterized by
said first strip carrying hook members.

9. An insulating shade assembly as defined in claim 8 further characterized by
clamping means engaging the first strip and the insulating shade to hold them together,
the part of the first strip engaged by the clamping means being free of hook members.

10. An insulating window shade assembly as defined in claim 7 further characterized by
sealing means carried by the shade adapted to be pushed against the window frame by the guide means when the shade is drawn to prevent the flow of air over the top of the first roller.

11. An insulating window shade assembly as defined in claim 7 further characterized by
a pull cord connected to the first roller for rolling the shade on said roller to expose the window.

12. An insulating window shade assembly as defined in claim 7 further characterized by
biasing means connected to the second roller for tensioning the cover fabric on the shade.



-15-

13. An insulating window shade assembly as defined in claim 11 further characterized by
a weight connected to the bottom of the shade to cause the shade to be drawn when the pull cord is released.

5



1 / 2

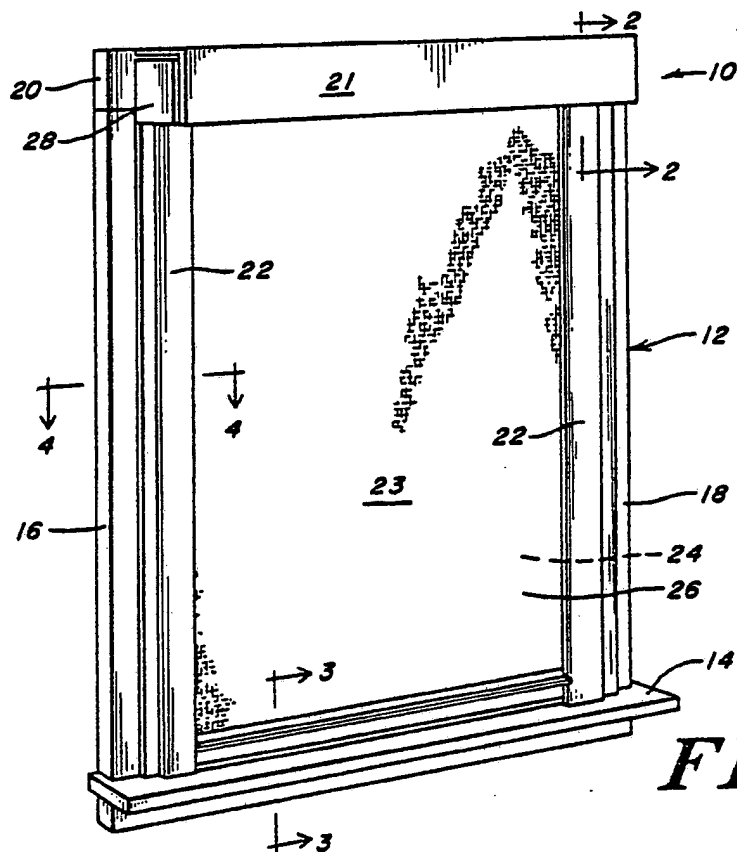


FIG. 1

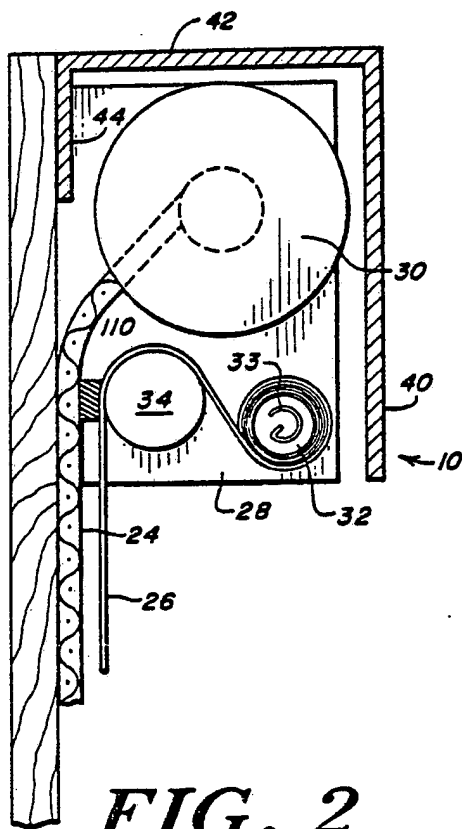


FIG. 2

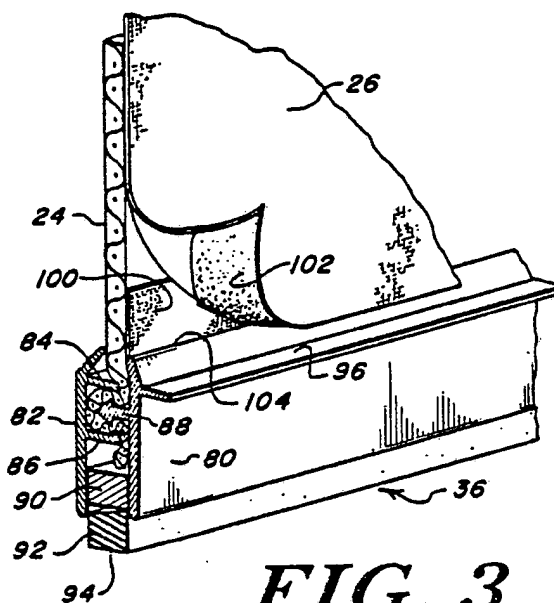


FIG. 3

2 / 2

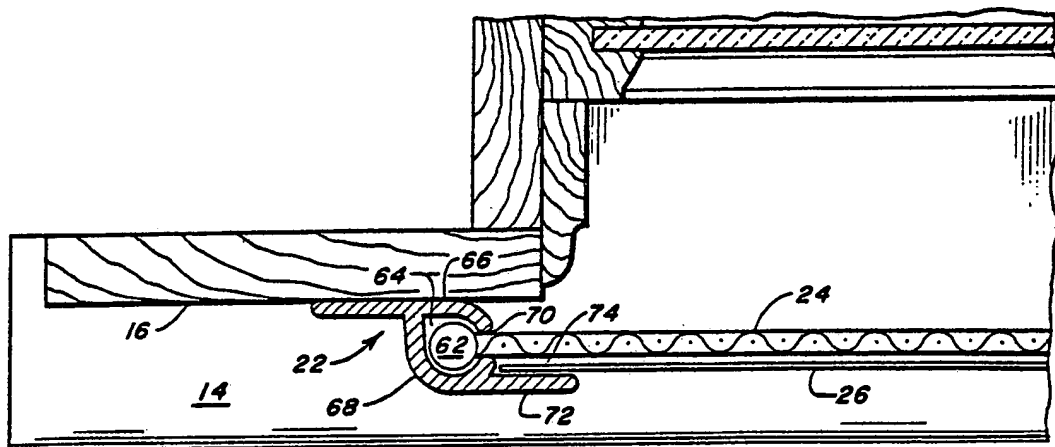


FIG. 4

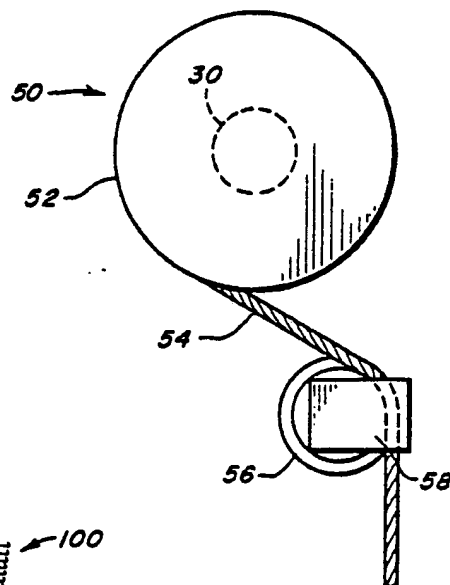


FIG. 5

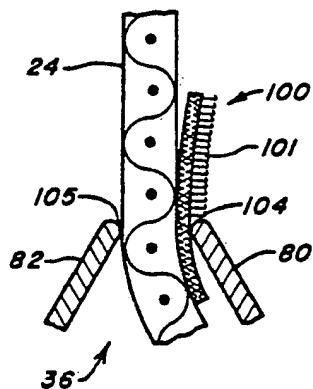


FIG. 6

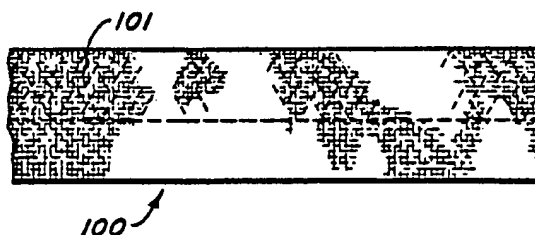


FIG. 7

INTERNATIONAL SEARCH REPORT

International Application No PCT/US 84/00736

I. CLASSIFICATION OF SUBJECT MATTER (If several classification symbols apply, indicate all) ³		
According to International Patent Classification (IPC) or to both National Classification and IPC		
IPC ³ : E 06 B 9/08		
II. FIELDS SEARCHED		
Minimum Documentation Searched ⁴		
Classification System	Classification Symbols	
IPC ³	E 06 B	
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched ⁵		
III. DOCUMENTS CONSIDERED TO BE RELEVANT ¹⁴		
Category [*]	Citation of Document, ⁶ with Indication, where appropriate, of the relevant passages ¹⁷	Relevant to Claim No. ¹⁸
A	DE, A, 2934674 (WRENGER) 12 March 1981	
A	DE, A, 2551810 (WELLER) 18 May 1977	
A	FR, A, 2469548 (HORN) 22 May 1981	

<p>[*] Special categories of cited documents: ¹⁶</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</p> <p>"&" document member of the same patent family</p>		
IV. CERTIFICATION		
Date of the Actual Completion of the International Search ¹	Date of Mailing of this International Search Report ¹	
16th August 1984	21 SEP 1984	
International Searching Authority ¹	Signature of Authorized Officer ¹⁰	
EUROPEAN PATENT OFFICE	G.L.M. Kroydenberg	

ANNEX TO THE INTERNATIONAL SEARCH REPORT ON

INTERNATIONAL APPLICATION NO. PCT/US 84/00736 (SA 7233)

This Annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report. The members are as contained in the European Patent Office EDP file on 06/09/84

The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE-A- 2934674	12/03/81	None	
DE-A- 2551810	18/05/77	None	
FR-A- 2469548	22/05/81	None	

For more details about this annex :
see Official Journal of the European Patent Office, No. 12/82